

APS

Magnets, Metals and Insulators: Electronic Order at High Pressure

Rafael Jaramillo

Harvard University, Cambridge, MA 02138, USA

X-ray diffraction was originally developed to probe the distributions of ions in condensed matter; the most famous such measurement remains Rosalind Franklin's photo 51. Synchrotrons provide the sensitivity to probe not only the distribution of ions, but also of conduction electrons and magnetic moments as they organize within magnets, metals, and insulators. I will discuss measurements of the charge and spin ordering in the elemental antiferromagnet Cr as the magnetism is suppressed towards the quantum critical point with pressure in a diamond anvil cell. This experiment resolves a long-standing question in the field of itinerant magnetism, establishes an important model system for studying quantum criticality, and expands the possibilities for probing quantum matter at high pressure using x-ray diffraction.